CLAIMS

I CLAIM:

1. A chemical screening apparatus comprising:

(a) at least two different strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip; and

(b) a support frame for receiving and holding the strips for mutual exposure to a material to be screened.

2. The chemical screening apparatus of claim 1 wherein the strip has a length taken along the longitudinal axis of at least ten times the maximum cross-sectional dimension of the strip taken across the longitudinal axis.

3. The chemical screening apparatus of claim 1 wherein the chemically reactive substances are organic compounds.

4. The chemical screening apparatus of claim 3 wherein the organic compounds are selected from the groups consisting of: oligonucleotides and peptides.

5. The chemical screening apparatus of claim 1 wherein the non-reactive strip is a glass fiber.

6. The chemical screening apparatus of claim 1 wherein the support frame holds the strips transversely spaced in parallel relationship.

7. The chemical screening apparatus of claim 1 wherein the support frame holds the strips transversely spaced along two perpendicular axes.

8. The chemical screening apparatus of claim 1 wherein the strips include isolating bands of a chemically repellant coating between the chemically reactive substances.

9. The chemical screening apparatus of claim 1 wherein the strips include recessed portions receiving the chemically reactive substances.

10. The chemical screening apparatus of claim 1 wherein the strips include a marker allowing the strips to be distinguished.

11. The chemical screening apparatus of claim 1 wherein the marker is selected from the group of printing and fluorescent material.

12. The chemical screening apparatus of claim 1 wherein the strips include a marker allowing a given end of the strip to be identified.

13. The chemical screening apparatus of claim 1 wherein the marker is selected from the group of printing and fluorescent material.

14. A chemical screening apparatus comprising a strip of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, oligonucleotides exposed on a surface of the strip.

15. The chemical screening apparatus of claim 14 wherein the strip has a length taken along the longitudinal axis of at least ten times the maximum cross-sectional dimension of the strip taken across the longitudinal axis.

16. The chemical screening apparatus of claim 14 wherein the non-reactive strip is a glass fiber.

17. The chemical screening apparatus of claim 14 wherein the strips include isolating bands of a chemically repellant coating between the chemically reactive substances.

18. The chemical screening apparatus of claim 14 wherein the strips include recessed portions receiving the chemically reactive substances.

19. The chemical screening apparatus of claim 14 wherein the strips include a marker allowing the strips to be distinguished.

20. The chemical screening apparatus of claim 14 wherein the marker is selected from the group of printing and fluorescent material.

21. The chemical screening apparatus of claim 14 wherein the strips include a marker allowing a given end of the strip to be identified.

22. The chemical screening apparatus of claim 1 wherein the marker is selected from the group of printing and fluorescent material.

23. A method of manufacture of strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip comprising the steps of;

(a) affixing the strips in a frame to be transversely spaced in parallel relationship in a plane to expose at a plane, surface locations for the chemically reactive substances;

(b) immersing the frame in a sequence of component solutions;

(c) light activating the bonding of a substance of the component solution with the strips at a subset of the locations for each component solution; and

(d) releasing the strips from the frame.

24. A method of manufacture of strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip comprising the steps of;

(a) positioning the strip to have different longitudinal portions positioned in adjacent volumes holding different component solutions;

(b) light activating the bonding of a substance of at least one of the component solutions with the strip at a location for at least one of the chemically reactive substances;

(c) repositioning the strip within the volumes of different component solutions; and

(d) repeating steps (b) and (c) to create chemically reactive substances at the locations.

25. The method of claim 24 wherein multiple strips are simultaneously positioned within the adjacent volumes to have light activated bonding of the component solution.

26. The method of claim 24 wherein the volumes are separated by a multiple of the separation of the locations of the chemically reactive substances.

27. The method of claim 26 wherein the strip is formed in a continuous loop to circulate through the volumes.

28. A method of manufacture of strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip comprising the steps of;

(a) positioning a plurality of strips to pass through a volume bracketing a segment of the strips;

(b) fill the volume with component solution bonding onto the segments a portion of the chemically reactive substances;

(c) flush the volume of component solution;

(d) repositioning at least some of the strip within the volumes so that different segments are subtended; and

(e) repeating steps (b) and (c) with different chemical solutions to create the chemically reactive substances at the locations.

29. The method of claim 28 wherein the strips are independently repositioned so that each strip may have different chemically reactive substances with respect to the others.

30. A method of manufacture of strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip comprising the steps of;

(a) affixing the strips in a frame to be transversely spaced in parallel relationship in a plane to expose at a plane, surface locations for the chemically reactive substances;

(b) placing a mask material over the plane exposing a selected subset of locations;

(c) immersing the frame in a sequence of component solutions;

(d) repeating steps (b) and (c) for a plurality of masks and component solutions to create the different chemically reactive substances; and

(e) releasing the strips from the frame.

31. A method of manufacture of beads of a non-reactive substrate supporting different, chemically reactive substances exposed on a surface of the strip comprising the steps of:

(a) preparing strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced at locations along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip by repeated exposure of the locations to different chemical materials in a predefined sequence; and

(b) cutting the strip between the locations to produce the beads.

32. A method of screening chemical materials comprising the steps of:

(a) preparing at least two different strips of a non-reactive energy conductive substrates extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip;

(b) arranging the strips to cross at a read-out site;

(c) applying energy to at least one of the strips to promote an energetic interaction with a chemically reactive substance at the read-out site; and

(d) detecting energy at least one of the strip to detect the energetic interaction at the read out site.

33. A method of promoting localized chemical reactions comprising the steps of:

(a) preparing least two different strips of a non-reactive energy conductive substrates extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip;

(b) arranging the strips to cross at a promotion site;

(c) applying energy to at least one of the strips to promote an energetic interaction with a chemically reactive substance at the promotion site causing the localized chemical reaction.